

- 57 -

**MODELING SUBSTRATE NOISE COUPLING**  
**USING SCALABLE PARAMETERS**

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ABSTRACT

Methods and apparatus for substrate modeling are disclosed. In one disclosed  
10 method, for example, the substrate modeling comprises determining scalable  $Z$   
parameters associated with at least two substrate contacts, constructing a matrix of the  
scalable  $Z$  parameters for the at least two substrate contacts, and calculating an inverse  
of the matrix to determine resistance values associated with the at least two substrate  
contacts. Computer-readable media containing computer-executable instructions for  
15 causing a computer system to perform any of the described methods are also disclosed.